

### REMARKS

Claims 1, 14, 15, 23, 30, 38, 43, 48, 49, and 53 have been amended. No new matter has been added. Support for the amendments can be found, for example, at page 9, lines 1-5 of the application. Note that the following amendments (i) raise no new issues that will require further consideration or search and (ii) only more clearly demarcate the scope of the claims so as to place them in condition for allowance without touching the merits of the application within the meaning of 37 C.F.R. 1.116(b).

Claims 1, 14, 23, 30, 38, 43, 48, 49, and 53 are independent. Claims 1-56 are pending.

Applicants thank the Examiner for withdrawing rejections under 35 U.S.C. § 112, second paragraph.

### Obviousness-Type Double Patenting Rejections

Claims 1, 4-11, and 14-56 have been rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-31 of U.S. Patent No. 6,322,901 ("the '901 patent") in view of Hakimi et al., U.S. Patent No. 5,260,957 ("Hakimi"). See page 2 of the Office Action.

Applicants have discovered a gain medium, a laser, a method of amplifying an optical signal, and a method of forming a laser that include **a concentrated solid including a plurality of semiconductor nanocrystals, the plurality of semiconductor nanocrystals being close-packed**. See claims 1, 14, 23, 30, 38, 43, 48, 49 and 53. Close-packed nanocrystals are an example of a concentrated solid. See page 2, lines 11-12 of the specification.

Neither claims 1-21 of the '901 patent nor Hakimi teach, suggest or motivate a person skilled in the art to form a concentrated solid including a plurality of semiconductor nanocrystals, the plurality of semiconductor nanocrystals being close-packed and having a critical volume fraction for development of stimulated emission. Neither reference teaches, suggests or motivates one skilled in the art to form a concentrated solid including a plurality of semiconductor nanocrystals in which the nanocrystals are close-packed.

Claims 1-31 of the '901 patent are directed to a coated semiconductor nanocrystal capable of light emission. See, for example, claims 1 and 10 of the '901 patent. These claims do not teach or suggest a concentrated solid including a plurality of semiconductor nanocrystals in which the nanocrystals are close-packed. Hakimi does not cure this deficiency.

Hakimi describes a "laser host material which is typically low-loss, striae free and optically clear. Disposed in this laser host material are a plurality of quantum dots." See Hakimi at column 2, lines 41-45. Nothing in Hakimi suggests or motivates one skilled in the art to make a concentrated solid including a plurality of semiconductor nanocrystals, the plurality of semiconductor nanocrystals being close-packed. As a result, claims 1-31 of the '901 patent in combination with Hakimi fails to teach, suggest or motivate one skilled in the art to use a concentrated solid including close-packed semiconductor nanocrystals.

For at least this reason, independent claims 1, 14, 23, 30, 38, 43, 48, 49 and 53 and the claims that depend from them are patentable over claims 1-31 of the '901 patent in view of Hakimi. Applicants respectfully request reconsideration and withdrawal of this rejection.

Rejection Under 35 U.S.C. § 102(b)

Claims 1, 4-5, 9-12, 14-17, 21-25, 28-34, 37-39, 42-44, 47-50 and 53-54 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Hakimi. See pages 3-5 of the Office Action. Claims 1, 14, 23, 30, 38, 43, 48, 49, and 53 are independent.

Applicants have discovered a gain medium, a laser, a method of amplifying an optical signal, and a method of forming a laser that includes **a concentrated solid including a plurality of semiconductor nanocrystals, the plurality of semiconductor nanocrystals being close-packed**. See independent claims 1, 14, 23, 30, 38, 43, 48, 49 and 53. Close-packed nanocrystals are an example of a concentrated solid. See page 2, lines 11-12 of the specification.

The Examiner asserts that "Hakimi discloses a gain medium 12 comprising a concentrated solid including a plurality of semiconductor nanocrystals 14 wherein the solid is [sic] substantially free of defects." See Office Action at page 3. Hakimi does not describe a concentrated solid. As described above, Hakimi discloses a "laser host material which is typically low-loss, striae free and optically clear. Disposed in this laser host material are a plurality of quantum dots." See Hakimi at column 2, lines 41-45. Hakimi only refers to the

quantum dots as being “disposed” in a laser host material, “such as PMMA or any other suitable low-loss striae free optically clear material.” See Hakimi at column 3, lines 32-34. The quantum dots described in Hakimi are not in a concentrated solid and are not close-packed. Hakimi discloses neither **a concentrated solid including a plurality of semiconductor nanocrystals, nor a concentrated solid including a plurality of semiconductor nanocrystals, the plurality of semiconductor nanocrystals being close-packed.** Thus, independent claims 1, 14, 23, 30, 38, 43, 48, 49 and 53 and the claims that depend from them are not anticipated by Hakimi. Applicants respectfully request reconsideration and withdrawal of this rejection.

Rejection Under 35 U.S.C. § 103(a)

Claims 2-3 and 13 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Hakimi. See Office Action at page 5. Claims 2-3 and 13 depend from independent claim 1.

As discussed above, Applicants have discovered a gain medium that includes **a concentrated solid including a plurality of semiconductor nanocrystals, the plurality of semiconductor nanocrystals being close-packed.** See independent claim 1. Hakimi does not teach or suggest a concentrated solid including a plurality of semiconductor nanocrystals, the plurality of semiconductor nanocrystals being close-packed. Nothing in Hakimi suggests or motivates a person of skill in the art to use such a concentrated solid in a gain medium. As a result, Hakimi fails to teach, suggest or motivate one skilled in the art to use a concentrated solid including a plurality of semiconductor nanocrystals, the plurality of semiconductor nanocrystals being close-packed in a gain medium. Indeed, there is no motivation provided in Hakimi to form a solid including nanocrystals that are close-packed.

For at least this reason, claim 1 and claims 2, 3 and 13 that depend from it are patentable over Hakimi. Applicants respectfully request reconsideration and withdrawal of this rejection.

CONCLUSION

Applicants ask that all claims be allowed in view of the amendments.